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1. *Scytonema arenarium*, n. s. Forming a thin uniform yellow brown stratum for some inches over sand, which it binds together by means of numerous transparent colourless rooting filaments. Threads obtuse, flexuous, here and there slightly branched at the base, and rooting; border thick transparent gelatinous; sporangia obscure, seldom visible, occupying only about a half of the central tube. Plate VII. fig. 3.

The specimens described above are in the rich collection of Sir W. J. Hooker, who has kindly lent me all the fungi he possesses. Out of the twenty-seven species sent by Messrs. Lawrence and Gunn it will be observed that twelve are common European fungi. Amongst them is a specimen of *Parmelia parietina* on an apple twig, on which perhaps it had been introduced from England.

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Fig. 1. *Mitremyces fuscus*, with its calyptra; one of the individuals is cut open to show the inner peridium; *a.* sporidia; *b.* a horizontal section of one of the processes of the mycelium very highly magnified; *c.* sporidia and flocci of *M. coccineus*.

Fig. 2. Flocci of *Mylitta australis* from the transparent veins, very highly magnified.

Fig. 3. *Scytonema arenarium*; *a.* filaments and rootlets; *b.* a filament more highly magnified; *c.* a portion of a filament with sporangia.

XL.—Information respecting Botanical Travellers.

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Villa do Crato, Sertão of the Province of Ceará,
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In two of the boxes you will find a few packets of seeds, which you will be so kind as to send to Mr. Murray ; also a small parcel of the wax produced by the Carrahuba palm (*Corypha cerifera*, Mart.), which grows abundantly in the plains between Aracáty and Icó, and of which Dr. Christison, of Edinburgh, may perhaps like to have a portion. Some shells, addressed to my own name, may be handed

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The collection now sent differs very materially from that which I transmitted from the Organ mountains, in its paucity of *Orchideæ* and Ferns. If, however, it affords you the same pleasure in examining the plants that I derived from collecting them, it will not be small; a pleasure heightened to me by anticipating your gratification. I will thank you to ascertain whether the beautiful leguminous shrub which I have named in honour of my excellent friend J. E. Bowman, Esq., does not belong, as I suspect, to a new genus. Some observations on the structure of the flower accompany my paper on the genus *Mouriria*, and I am anxious that the facts should be ascertained before Mr. Murray distributes the seeds, of which I have sent him an abundant supply. I may also mention that the composite plant (No. 1732), which I took to be a new genus when arranging the collection, I have since found to be an undescribed species of *Ichthyothere*, Mart. (*vide* DeCand. Prodr. vol. v. p. 504.)

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laire); it flowers before the foliage appears, and in this state much resembles the alder of Europe when loaded with its catkins. Its mode of growth is upright, and it attains a height of 30 or 40 feet. Large *Ingas* or *Mimosas*, and the *Triplaris Americana* are also common; of the latter the female plant when in flower is recognizable at a great distance, as well as the *Chrysobalanus*, that I formerly mentioned as abounding below Icó, and which also grows in plenty here. In passing along the eye is sometimes relieved from the flowerless monotony of the woods by seeing here and there a solitary purple or yellow *Bignonia*, or an azure-blossomed *Jacaranda*, destitute of foliage, but rearing its therefore more conspicuous and magnificent diadem of flowers above the other denizens of the wood; or an occasional plant of *Cochlospermum serratifolium*, loaded also with its large and beautiful yellow bloom, attracts the attention of the traveller. On dry hilly places there are abundance of small shrubs. The only ones, however, that I recognized were two or three species of *Lantana* and *Krameria Ixina*. Within a day's journey of Crato I collected the only orchideous plant that I have seen since quitting the coast, a new *Oncidium*, which I have called *O. urophyllum*. The natives of the Sertão call it *Rabo de Tat'u* (armadillo's tail). It grows in great plenty on the soft bark of a species of *Geoffroya*.

It was not until I came within a few leagues of Crato that the country became more verdant, and large tracts of land planted with cane gave the assurance that I was approaching a place better suited to my pursuits than any that I had seen since my arrival in the Sertão. It is impossible to express to you my delight on entering into this comparatively rich and smiling district, after a ride of more than 300 miles through one which is little better at this season of the year than a desert. The evening on which I approached this town was one of the most beautiful I ever remember to have seen. The sun was setting in great splendour behind the Serra de Araripe, a long range of hills about a league to the westward of the villa, but the freshness of the country deprived his rays of that burning heat which shortly before sunset is so oppressive to the traveller further down. The beauty of the night, the cool and reviving feeling of the atmosphere, and the richness of the landscape, so different from what I had lately seen, all tended to produce a buoyancy of spirit such as only the lover of nature can experience, and which I vainly wished might prove enduring, as I felt not only at ease with myself, but "at peace with all the world."

During the journey I had added but little to my stock of specimens. The most remarkable of them is a small *Jungermannia*-look-

laire); it flowers before the foliage appears, and in this state much resembles the alder of Europe when loaded with its catkins. Its mode of growth is upright, and it attains a height of 30 or 40 feet. Large *Ingas* or *Mimosas*, and the *Triplaris Americana* are also common; of the latter the female plant when in flower is recognizable at a great distance, as well as the *Chrysobalanus*, that I formerly mentioned as abounding below Icó, and which also grows in plenty here. In passing along the eye is sometimes relieved from the flowerless monotony of the woods by seeing here and there a solitary purple or yellow *Bignonia*, or an azure-blossomed *Jacaranda*, destitute of foliage, but rearing its therefore more conspicuous and magnificent diadem of flowers above the other denizens of the wood; or an occasional plant of *Cochlospermum serratifolium*, loaded also with its large and beautiful yellow bloom, attracts the attention of the traveller. On dry hilly places there are abundance of small shrubs. The only ones, however, that I recognized were two or three species of *Lantana* and *Krameria Ixina*. Within a day's journey of Crato I collected the only orchideous plant that I have seen since quitting the coast, a new *Oncidium*, which I have called *O. urophyllum*. The natives of the Sertão call it *Rabo de Tat'u* (armadillo's tail). It grows in great plenty on the soft bark of a species of *Geoffroya*.

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Crato is a small and sufficiently miserable town, situated in the hollow part of a large valley, several leagues in extent, and bounded by the Serra de Ararípe on the south and west. In case you should consult a map of Brazil to find the place where I now am, I may mention that the one which I possess, and which I believe to be the last published, is very incorrect as regards the situations of the towns in this province: for instance, Icó is placed where the Serras de Mangabeira ought to be, and *vice versa*, and the distance between them ought to be 10 leagues. Crato, instead of being 10 leagues to the S.W. of Icó, is 30, thus bringing it exactly to the Serra de Ararípe, its proper position; and Barra de Jardim (not Bomjardin) is 16 leagues to the south of Crato. Sugar cane, mandioca, rice and tobacco are the principal articles of culture in the vicinity of Crato. From the juice of the cane a kind of sugar is prepared called *rapadura*, and made into hard cakes about the size of half bricks. This substance is used all over the Sertão as a substitute for sugar, and forms the great article of commerce between Crato and Icó. Almost all the fruits which are sold in the towns near the coast are obtainable here: such as the orange, lime, lemon, mango, papau, banana, plantain, grape, pine-apple, melon, and water-melons. The first of these are vended at about 1*d.* the dozen, pine-apples double that price, and I purchased to-day a remarkably fine-flavoured melon, as big as my head, for about 2*d.* of our money. There are a few small plantations of cocoa-nuts, which appear to thrive well and bear abundantly, and in the woods are great numbers of cashew trees, but their fruit (or rather the thickened peduncle, which is the esculent part) is small, not bigger than a cherry: probably it is a different species, of which you may judge, as I send you a specimen in flower and leaf, and to Mr. Murray a few of its seeds. In the Catingas, or deciduous forests, a fruit abounds called *mangaba*, of which you received specimens from Pernambuco; it belongs to the *Apocynæ*, and the flavour is, in my opinion, very superior to that of any native fruit that I have

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The great cause to which the fertility of this part of the Sertão may be attributed exists in the numerous springs which rise from the base of the Serra de Ararípe, and which are again divaricated in a thousand directions for the purpose of irrigation. At present but little land is cultivated in comparison with what would amply repay such labour; the vicinity being but thinly populated and the habits of the natives very indolent. With very little trouble they raise as much as will support life, and seem to care for nothing else. Their dress is of the simplest kind, and not expensive. When, however, the population becomes more numerous, and civilization shall have multiplied their wants, this district will assuredly prove a rich and valuable part of the province.

During my residence here I have made many excursions, but the Serra de Ararípe has afforded my best field. I have spent several days in exploring its ravines, sides and summit, every trip yielding me large supplies of new and rare plants, as the collections now sent home will abundantly testify. The greater proportion of the wooded districts around Crato consists of deciduous trees and shrubs, here called *Catingas*; but in low moist localities, and along the base of the Serra, a great many of the trees are evergreen. As I am aware that you feel particularly interested in knowing what are the large trees of the countries which I visit, I shall now give a list of such as are most abundant or remarkable in this vicinity. One of the commonest denizens of the Catingas is *Moghania glabrata*, St. Hilaire, and it is the only truly gregarious exogenous tree that I have met with in Brazil, covering large tracts for miles, to the exclusion of almost everything else. In general it is a tree of 30 or 40 feet high; but old individuals often attain a much greater stature. Like many of the other inhabitants of the Catingas, its flowers appear before the leaves. The blossoms are produced in large panicles, they are of a greenish-

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yellow colour, and very sweet-scented. The natives of the Sertão call this tree *Tingí* and apply it to many useful purposes. An infusion of the bark of the root is employed to poison fish, and that of the stem to cure old ulcers, while an excellent soup is afforded by the large cotyledons of the seeds. Another tree, which grows in the same situations, is a species of *Caryocar*, and makes a fine appearance when covered with its large racemes of yellow flowers. The fruit, which is not yet ripe, is said to be excellent when cooked, and the hard wood is used in mill-work. This tree is called *Pikí* by the natives of the Sertão. Two large ingas are also common in the woods, and I have sent specimens of both; one is called *Timbahuba* and the other *Visgéira*. The former is the smaller; the *Visgéira* presents a most remarkable appearance when its flowers expand, these being of a dark purple colour, and suspended on a peduncle a foot in length. The *Jatoba* is another large tree, which I have not yet seen in flower, but suspect it to be a species of *Hymenæa*. The cashew also reaches a considerable height in this neighbourhood, and grows more upright than the variety from the coast. There is also the *Angelina*, a beautiful and large species of *Andira*; good specimens of it in flower are in this collection; and some of the fruits, which I am at present drying, shall follow by the next opportunity. There are also two large *Bignonias* growing here, one with purple and the other with yellow flowers; but owing to the durability and hardness of their wood, which is much sought for by workers in mill- and cart-work, they are not allowed to attain any great size near the town of Crato. Besides these which I have enumerated, there are many others, but, though of considerable size, they can hardly be called large trees. Among them I may mention the *Pao de Jungada* (*Apeiba Tibourbow*, Aubl.), as of frequent occurrence, and conspicuous from its large prickly capsules. Its wood affords the material of the raft-boats, called *jungudas*, so much used on the coast. A species of *Byrsonima*, very lovely when in blossom, and another of *Callisthene*, also remarkably beautiful, grow here; the latter, being distinct from the three species described by Martius, I believe to be new, and in allusion to its great masses of charming yellow flowers, I have called it *C. floribunda*.

I have now examined the stamens of species belonging to four different genera of the tribe *Vochysiaceæ*, and find them all, as Martius describes them, 4-celled.

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Since coming here I have enjoyed excellent health, except for eight days, during which I was confined to the house from a slight attack of ophthalmia, a very common malady in this neighbourhood. I have been visited by many persons suffering from the disease in a chronic state, and have gained no little reputation from having either cured or much alleviated the symptoms in all those whom I treated, even when the complaint has been of long standing. The people among whom I am now thrown are far from being a good set. They are remarkably revengeful, and their frequent quarrels are commonly settled by the treacherous use of the long sharp knife (*faca de ponta*), which every one carries at his side. My servant, my man Friday as I call him, a negro of very superior character and abilities, had a narrow escape the other day; for having involved himself, I know not how, in a dispute with a fellow who was in a house whither he had gone for the inoffensive purpose of getting his hair cut, his opponent drew his knife and attempted to stab him. My servant fortunately caught the blade in the hand which he had raised to ward off the blow, by which he prevented his body from being struck, but nearly lost two of his fingers. The assassin fled, leaving his weapon behind him, and has not since been heard of. For my own part I find it necessary to be very cautious as to what I say or do among them. They scarcely know what to make of me, or to imagine to what purpose I intend to apply the “many leaves,” as they call them, which I am collecting. Those “who still would seem the wisest,”

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aver that they are to serve as patterns for printed cottons; an opinion worthy of a native of my "auld toon of Glasgow."

By the boxes I wrote you a few lines, but I expect this letter will reach you first, as I forward it to Pernambuco by a person whom I am sending thither to bring me my letters or anything that may be lying there for me, as I begin to feel anxious about my friends, from whom I have had no news for nine whole months. It will take him more than a month to go and return, but he will still be back before I start for Piahy.

I had great difficulty in obtaining wood wherewith to make the boxes which I have just despatched, and as to any help in the way of making them, it was needful, after I had bought up at great expense all the old boxes in the town, to put them together with my own hands, which are now so blistered with the use of the hammer and saw that I can hardly hold my pen. Necessity has no law; from cooking downwards I have to do almost everything. Insects are very rare here. I had collected a few dozens and laid them on the house-top at night to dry in a sheet of paper, as the weather had been damp; but in the morning I had the mortification to find them all gone except some of the legs and wings, which vexed me the more as many of them were new. I shall recommence collecting immediately.

BIBLIOGRAPHICAL NOTICES.

De Pinibus Taurico-Caucasicis. Auctore Steven*.

In a preceding paper the propriety of considering the Caucasian pines as a separate group was suggested, under the idea that they would be found to differ from those of Europe, and that united with those of Northern Asia they might prove to be of sufficient importance to require a separate classification in the pinology of the globe. These views have been completely confirmed by the work we are about to examine, and at a much more recent period than we had ventured to anticipate. We are indebted to M. Steven for bringing together at one view the results not only of his own researches, but those of Nordmann, Wittman, Sovitz and others; a course which cannot be too much commended from its superiority to the usual practice in this sort of publication of giving the isolated discoveries or observations of the writer, whilst those of others are carefully withheld from notice.

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